Injury Models

Blast-related LE Injuries

Researchers at the University of Virginia's Center for Applied Biomechanics and USAARL, sponsored by the DHA RDA Directorate, are conducting research into LE injuries resulting from UBB. To investigate injury and response of vehicle occupants subjected to simulated UBB loads, laboratory experiments were performed to recreate blast-induced intrusions which included full visualization of the impact event, instrumentation of Post-Mortem-Human-Specimens, and ATDs. Results from these experiments include (1) a human injury risk function for lower extremities at UBB loading rates, (2) updated FE models of the Hybrid III ATD LE and human LE, and (3) the development of a transfer function for potential use with Hybrid III LE experimental results for determination of force levels in the human tibia. These findings suggest that loading rate plays a role in LE fracture location, and that fracture locations move distally as loading rate increases. This research program is helping the injury biomechanics community better understand the mechanisms of LE injury in the blast environment.